

REMARKS

This is responsive to the Office Action mailed on March 5, 2007. In that Office Action, claims 1-148 were rejected. With this response, claims 1, 41 and 77 have been amended to recite that the aqueous component comprises milkfat. Support for these amendments can be found, for example, on page 5, lines 7-11. This application continues to include claims 1-148.

The Office Action rejected claims 77-88, 91-94, and 97-114 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent 5,308,637 to Richards (Richards et al.). The Office Action alleges that Richards et al. discloses the manufacture of food sauce where the process described includes a separate preparation of the fat and aqueous phase. The Office Action stated that aqueous phase is prepared with starch, fat phase includes an emulsifier and that the ingredients are combined and heated to 180-212F to cook the sauce and emulsify ingredients to form an oil in water emulsion. The Examiner stated that amount of fat expected in the composition is shown to range from 1 to 50% and protein is an expected component because the formulation includes milk and that heat treatment of the aqueous and fat phase is shown. The Examiner further stated that homogenization step of claim 80 is a process limitation carrying no weight in these product claims. The Examiner concluded that no unobvious unexpected difference is seen between the stability of the Richards et al. emulsion and the emulsion of the present invention. The Examiner also stated that whey solids, buttermilk solids, intermediate mixtures and hollandaise sauce are not mentioned but are either not critical or obvious modifications.

Applicants submit that the products of the amended claims of the present invention is different and unobvious than the product of Richards et al. The products claimed in the present invention are derived after homogenization of the aqueous, solid and fat components. Richards et al. only teaches emulsification by mild agitation and teaches away from the agitation that occurs in homogenization. See Richards et al., col. 3, lines 31-34. Homogenization of milk as defined at Wikipedia.org is "... the process of breaking up that fat into smaller sizes so that it no longer separates from the milk, allowing the sale of non-separating 2% and whole milk. This is accomplished by forcing the milk at high pressure through small orifices." (See attached) Applicants submit that an emulsion product generated by mild agitation as Richards et al. is different and has different properties, especially with regard to heat stability, than an emulsion

generated by homogenization as in the present invention. In addition, Richards et al. teaches away from the use of homogenization conditions as stated above.

Applicants disagree with the Examiner's comment regarding the process limitation carrying no weight in product claims. The MPEP states that "The structure implied by the process steps should be considered when assessing the patentability of product-by-process claims over the prior art, especially where the product can only be defined by the process steps by which the product is made or where the manufacturing process steps by which the product is made, or where the manufacturing process steps would be expected to impart distinctive structural characteristics to the final product." See MPEP 2113. The claimed product obtained by homogenization has a different structure than the product obtained by heating with simple agitation. In addition, there is no teaching or suggestion in Richards et al. regarding the success of homogenization of a sauce base as in the present invention, let alone the heat stability. Aqueous components with milkfat, for example cream, must be handled carefully since they are highly susceptible to creaming and churning out. Even minor modifications can lead to a detrimental result. The highly desirable heat stability of the sauce base in addition to its organoleptic properties would be unexpected by a person of ordinary skill in the art.

In light of the above, Applicants request the withdrawal of the rejections based upon Richards et al and allowance of the claims 77-88, 91-94 and 97-114.

The Office Action rejected claims 1-5, 10, 11, 15, 22-39, 77-88, 93, 94 and 97-114 under 35 U.S.C. 103(a) as being unpatentable over Andreae (WO 96/25857). The Office Action states that Andreae discloses a high temperature cooking sauce where cheese is combined with hot water at 70C, vegetable fat, egg yolk and other ingredients are mixed in. The Examiner stated that the combination was sterilized and homogenized at 290-5800 psig and the final product considered to be stable. The Examiner cited the composition on page 2 of Andreae to contain the basic ingredients of claim 77. The Examiner further stated that an emulsion was not mentioned but a person of ordinary skill would expect an oil in water emulsion and that Alfredo and hollandaise sauce were not mentioned but it would have been obvious to modify the formulations.

Applicants submit that claims 1 and 77 have been amended to specify that the aqueous component comprises milkfat. Support for this amendment is found throughout the Specification and in particular, for example, on page 5, lines 7-11. In Andreae, the aqueous

component does not include milkfat. Andreae relates to Au gratin sauces and au gratin sauces generally do not contain cream. See Andreae page 2, line 11. The edible fat referred to in Andreae is derived from vegetable fats and oils. See page 3, lines 26-28. The aqueous components used to make the Au gratin sauce in Andreae is water. There is no teaching or suggestion in Andreae about using an aqueous component that comprises milkfat. As discussed in the Applicants' Specification, aqueous components comprising dairy products have issues with regard to "churning out" or "creaming" when cycled between hot and cold temperatures. See Specification, page 2, lines 11-19. It is the particular advantage of the present invention that aqueous components with dairy products are amenable to temperature cycling without these adverse effects.

The Examiner's statement that the composition on page 2 of Andreae contains the basic ingredients of claim 77 is inappropriate in light of the claim amendments. Furthermore, the emulsion of the present application is different than Andreae because of the presence of the milkfat in the aqueous component. Since independent claims 1 and 77 are not obvious, dependent claims relating to Alfredo and hollandaise sauce are also not obvious.

In light of the above comments, Applicants request the withdrawal of the rejections based on Andreae and allowance of claims 1-5, 10, 11, 15, 22-39, 77-88, 93, 94 and 97-114.

The Office Action rejected claims 1-5, 7, 14, 20, 21, 30, 35-45, 47, 57, 58, 61, 65 and 67-78 under 35 U.S.C. 103 (a) as being unpatentable over Kroening (2003/0219523 or 2003/0219524). The Office Action stated that the aqueous phase is made to contain citric acid, then egg yolk is added which is taken to be the first intermediate. The Office Action further stated that butter is melted and added to the aqueous phase and the combination is mixed to form the second intermediate phase and a two stage homogenizer was used to homogenized the blend under the pressure conditions indicated in claim 1. The Examiner also stated that the recitation of an emulsion does not carry patentable weight and the Alfredo and butter sauces are obvious formulations.

As discussed above, Applicants have amended claims 1, 41 and 77. Applicants submit that the claims as amended are not obvious over the Kroening applications which relate to making of Hollandaise sauces. None of the Hollandaise sauces in Kroening use an aqueous phase that includes milkfat. The aqueous phase in the Kroening applications includes addition of

citric acid to form water/citric acid mixture. Enzyme modified yolk (EMY) is added to the water/citric acid mixture prior to combining with liquified butter. The water/citric acid/EMY mixture is not the same as the aqueous component comprising milkfat as in the present invention. There is no teaching or suggestion in the Kroening applications regarding the use of milkfat in the aqueous components. The first intermediate formed in the present invention is different than the first intermediate in the Kroening applications as stated by the Examiner. The first intermediate of Kroening, as stated by the Examiner, does not include any milkfat. In contrast, the present invention includes the presence of milkfat in the first intermediate. As stated above, aqueous components with milkfat are highly susceptible to churning out and creaming and a person of ordinary skill in the art would not expect the heat stability and the organoleptic properties of the claimed inventions. Thus, the intermediates of the process in claims 1 and 41 and the product of claim 77 are different and unobvious from the process and product of the Kroening applications.

In light of the above comments, Applicants request the withdrawal of the rejections over the Kroening publications and allowance of claims 1-5, 7, 14, 20, 21, 30, 35-45, 47, 57, 58, 61, 65 and 67-78.

The Office Action rejected claims 1-5, 7, 12, 13, 20-24, 33-45, 47, 51, 52, 57, 58, 67-75, 77-83, 86-88, 95-99 and 109-114 under 35 U.S.C. 103 (a) as being unpatentable over Muir (2004/0005996). The Office Action stated that Muir discloses protein stabilized emulsions and that soy protein isolate is combined with water and stirred to form the first intermediate. The Examiner stated that after lowering the pH of the aqueous mixture, oil and sugar are added to form the second intermediate which in turn is homogenized or microfluidized. The Examiner further stated that the claims in the present invention differ from Muir in the recitation of the first and second intermediate but no unobvious or unexpected result is seen from the recitation because Muir discloses preparation of the emulsion in stages as if they were intermediates.

As discussed above, Applicants have amended claims 1, 41 and 77. Applicants submit that the emulsions of Muir are different than the emulsions of the present application. The aqueous component of the Muir publication does not include milkfat as in the present Specification. The aqueous component only includes protein that is pH adjusted, not milkfat. The methods of the present invention do not include the step of adjusting the pH, let alone

adjusting it to a value of 1.5 The intermediates formed in the present invention are different than Muir because of the presence of milkfat in the aqueous component.

In light of the above comments, Applicants request the withdrawal of rejections over Muir and allowance of claims 1-5, 7, 12, 13, 20-24, 33-45, 47, 51, 52, 57, 58, 67-75, 77-83, 86-88, 95-99 and 109-114.

The Office Action rejected claims 1-6, 14-16, 20, 22-37, 41-57, 59-70, 75-90, 97-111, 115-119, 121-124, 133-145, 147 and 148 under 35 U.S.C. 103 (a) as being unpatentable over Irwin (2002/00544939) The Office Action stated that Irwin disclosed pH modified sauces and the formulation for sauces are disclosed in examples. The Office Action also stated that the aqueous component is shown to contain a number of dissolved solids and an emulsifier and are combined with mixing and heat. The Examiner stated that the aqueous and fat phases are combined and homogenized at 500 psi. The Examiner also stated that claim 1 appears to differ from Irwin in the recitation of intermediates but that the process steps in Irwin would have been understood to be intermediates by person of ordinary skill in the art. The Office Action stated that the heating step, formation of oil in water emulsion and use of buttermilk solids are all obvious differences and that there is no unobvious difference between the stability of the product in Irwin and the stability of the product of the present invention.

Applicants respectfully disagree with the Examiner. With respect to the process, the method of Irwin includes the cream in the fat phase, not in the aqueous phase as in the present invention. The fat phase is subjected to two rounds of homogenization. The first homogenization is performed with only the fat phase at 2700 psi and the second homogenization is performed after mixing with the aqueous phase and performed only at 500 psi. See page 2, column 1. In contrast, the aqueous phase includes milk fat in the present invention which after mixing with the fat phase is subjected to only one round of homogenization.

With respect to products, Applicants submit that the intermediates of Irwin and the present invention are different and therefore, the emulsion and its properties are also different. During the first round of homogenization in Irwin, only cream, cheese and butter are present. There is no emulsifier or other dissolved solids. The intermediates from this first homogenization are then mixed with the aqueous phase and homogenized again to form the final products. In contrast, in the present invention the aqueous component with milkfat and fat phases are combined prior to the one and only homogenization step. As described above,

homogenization breaks up the fat into smaller sizes so it no longer separates from the milk. Irwin requires this homogenization step before combining with the aqueous phase and emulsifier whereas Applicants only homogenize after the aqueous and fat phases are combined. Thus, the intermediates and the products of the present invention are different and unobvious to a person of ordinary skill in the art.

In light of the discussion above, Applicants submit that both the method and products in the present invention are not obvious in view of Irwin. Applicants request the withdrawal of the rejections based on Irwin and allowance of claims 1-6, 14-16, 20, 22-37, 41-57, 59-70, 75-90, 97-111, 115-119, 121-124, 133-145, 147 and 148.

The Office Action rejected claims 120 and 121 under 35 U.S.C. 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The Examiner stated that the two percentages of ingredients are confusing and appear to contradict each other in these claims.

Applicants submit that claim 120 specifically defines a preferred range of milkfat present in the base whereas claim 121 refers to a preferred range of moisture in the base. These are two different parameters and not necessarily dependent on each other. Bases that comprise percentages outside this range are also within the scope of the broader independent claims. In light of these comments, Applicants respectfully request the withdrawal of rejections based 35 U.S.C 112, second paragraph.

The Office Action rejected claims 115-124, 127-128, and 133-142 under 35 U.S.C. 103 (a) as being unpatentable over Bos (EP 0340857). The Examiner stated that Bos discloses an edible oil-in-water emulsion and that cream is added to water, skim milk powder, butterfat and whey protein concentrate. The Examiner further stated that after mixing, pasteurization and homogenization the product is cooled to form a spread and though an emulsifier is not mentioned it is an inherent component of the composition and that no difference is seen between the stability of the claims and the stability of Bos. The Examiner also stated that the way a product is made, e.g. by intermediates, is a process limitation, carrying no weight in the product claims.

Applicants submit that the product of Bos is a spreadable product not a sauce base as in the present invention. The emulsions obtained in Bos are different than the emulsions obtained in the present invention. As the examiner stated, Bos does not recite the use of an

emulsifier. The use of an emulsifier adds to the stability of an emulsion over time and over different ranges of temperatures. The spreadable product of Bos is not reheated and not subject to the cycles of temperature changes that the sauce base of the present invention. Applicants submit that the spread that is described in Bos would be unstable as it is cycled between refrigerator or ambient temperature or cooking temperature. A person of ordinary skill in the art would expect the oil in water emulsion of Bos would “cream” or “churn out”. The use of emulsifiers used in the particular way described in the Specification is critical to the heat stability of the dairy sauce of the present invention.

In light of the above comments, Applicants request the withdrawal of the rejections based on Bos and allowance of claims 115-124, 127-128, and 133-142.

The Office Action rejected claims 77-88, 93-94, 99, 101-122, 125-128 and 133-148 under 35 U.S.C. 103 (a) as being unpatentable over Stuchell (6,759,078). The Examiner stated that Stuchell discloses an aseptic cream substitute for use in preparing sauce bases and that sauces made are disclosed with the use of the cream substitute. The Examiner stated that the cream substitute is shown to include a water phase and that it is combined with melted butter homogenized, pasteurized and cooled. The Examiner also stated that an emulsifier is not mentioned in the product but it forms an obvious part of the composition and that egg yolks are the emulsifier in the hollandaise formulation. The Office Action stated that processing conditions do not carry any weight in product claims.

Applicants submit that the aqueous components of the sauce bases of the present invention include milk fat. The cream substitute of Stuchell is entirely different from the milkfat or cream component in the present invention. The stability, the organoleptic properties, the quality of the emulsion would all be different and unobvious over Stuchell. Stuchell use of the cream substitute results in a totally different product. The sauces described are generic formulations of sauces in which the cream is substituted with the cream substitute. Stuchell is silent regarding the homogenization, short term stability and long-term stability of these sauces. The homogenization, pasteurization and cooling referred to by the Examiner refers to making of the cream substitute not making of the dairy sauces. The cream substitute made by homogenization, pasteurization, etc. is simply added to the formulations listed in column 7 of Stuchell. The sauces prepared using this method would have all of the limitations and problems of the prior art sauces described in the present Specification on page 1, lines 24 to page 2, line 8.

In light of the above comments, Applicants request the withdrawal of the rejections based on Stuchell and allowance of claims 77-88, 93-94, 99, 101-122, 125-128 and 133-148.

The Office Action rejected claims 1-5 and 77-88 under 35 U.S.C. 103 (a) as being unpatentable over Inayoshi (5,494,695). The Examiner stated that Inayoshi discloses custard cream as an oil in water emulsion that includes warming the oil-in-water phase to 70C and mixing in lecithin and then the aqueous phase is heated and homogenized, pasteurized and cooled. The Examiner stated that claim 1 appears to differ in the recitation of the homogenizer pressure and no unobvious or unexpected results are seen from this feature.

Applicants submit that the amended claims are not obvious over Inayoshi. In the amended claims, the aqueous component includes milkfat. The aqueous component of the Inayoshi does not include or contemplate milkfat. Furthermore, the custard cream of Inayoshi is not for maintaining at elevated temperature for prolonged periods of time and for cycling between cool and cooking temperatures.

In light of the above comments, Applicants request the withdrawal of the rejections based on Inayoshi and allowance of claims 1-5 and 77-88.

The Office Action rejected claims 17-19, 54-56 and 131-132 under 35 U.S.C. 103 (a) as being unpatentable over Irwin as applied to claims 1-6, 8, 9, 14-16, 20, 22-37, 41-57, 59-70, 75-90, 97-111, 115-119, 121-124, 133-145, 147 and 148 above and further in view of either Norris (4,005,228) or Youcheff (6,265,007). The Examiner stated that the claims appear to differ from Irwin in the recitation of the use of anhydrous fat and that each of Youcheff and Norris teach that anhydrous fat is known in the art and it would have been obvious to one of ordinary skill in the art to utilize the fat of Norris or Youcheff as an obvious alternative source of fat in the Irwin process.

As discussed above, the present invention as claimed is not obvious over Irwin for the reasons stated previously with respect to the rejection of claims 1-6, 8, 9, 14-16, 20, 22-37, 41-57, 59-70, 75-90, 97-111, 115-119, 121-124, 133-145, 147 and 148 in view of Irwin alone. Applicants submit that Youcheff and Norris do not add anything to the teachings of Irwin that would obviate the invention as claimed. The use of anhydrous fat in the present claims does not render dependent claims 17-19, 54-56 and 131-132 obvious over Irwin in view of Youcheff and Norris and reconsideration and allowance are respectfully requested.



The Office Action rejected claims 129-130 under 35 U.S.C. 103 (a) as being unpatentable over Irwin as applied to claims 1-6, 8, 9, 14-16, 20, 22-37, 41-57, 59-70, 75-90, 97-111, 115-119, 121-124, 133-145, 147 and 148 above and further in view of Muir (2004/0005996). The Examiner stated that the claims appear to differ from Irwin in the recitation of the use of soy protein product and that Muir teaches that soy protein has a known use in emulsion and that it would have been obvious to one of ordinary skill in the art to utilize soy-based cheese as a substitute for dairy cheese in Irwin in order to provide a vegetarian alternative in the sauce.

As discussed above, the present invention is not obvious over Irwin for the reasons stated with respect to claims 1-6, 8, 9, 14-16, 20, 22-37, 41-57, 59-70, 75-90, 97-111, 115-119, 121-124, 133-145, 147 and 148. Muir does not add anything to the teachings of Irwin that obviates the present invention as claimed in claims 129-130. Applicants submit that claims 129-130 are dependent on claims 115 and 129, respectively, are unobvious and patentable because independent claim 115 from which they are dependent is unobvious. Applicants request the withdrawal of the rejection of claims 129-130 over Irwin in view of Muir and allowance of these claims.

It is believed that the claims are neither taught nor suggested by the prior art, and a Notice of Allowance is respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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# Homogenization

From Wikipedia, the free encyclopedia  
(Redirected from Homogenize)

**Homogenization** (or **homogenisation**) is a term used in many fields such as Chemistry, agricultural science, food technology, sociology and cell biology. Homogenization is a term connotating a process that makes a mixture the same throughout the entire substance.

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## Chemistry

Intensive mixing of mutually insoluble phases (sometimes with addition of Surfactants) to obtain a soluble suspension or emulsion.

In Science:

- Homogeneous — a mixture that is the same(uniform) throughout.
- Heterogeneous — a mixture that has separate parts.

## Food technology

One of the oldest applications of homogenization is in milk processing, where the aim is to prevent or delay the natural separation of cream from the rest of the emulsion. The fat in milk normally separates from the water and collects at the top. Homogenization is the process of breaking up that fat into smaller sizes so that it no longer separates from the milk, allowing the sale of non-separating 2% and whole milk. This is accomplished by forcing the milk at high pressure through small orifices.

When soft solids are milled in a liquid, this can also be seen as a form of homogenization. Among the many types of equipment that can be used for this process are extruders, hammermills and colloid mills.

## Cell biology

Homogenization is a process that involves breaking apart cells - releasing organelles and cytoplasm. When the purpose is to extract organelles, it is frequently done in two steps; first using a blender to break the tissue up, and then with an ultrasonic or mechanical tissue disruptor. The organelles are then generally separated using differential centrifugation. Depending upon the subcellular fraction wanted, different processes are used to separate them. When the aim is to extract nucleic acids, the tissue is often ground in a mortar and pestle under liquid nitrogen.

Sometimes, however, a much milder procedure is followed, where the aim is to collect whole, intact cells. Homogenized cells must be kept at low temperatures to prevent autolysis and kept in an isotonic solution to prevent osmotic damage.

## See also

- Pasteurization

## External links